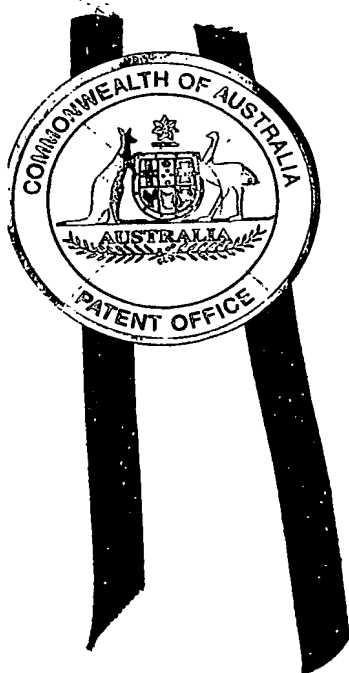




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WITNESS my hand this
Twenty-second day of October 2004

A handwritten signature in cursive script, reading 'J. Billingsley'.

JULIE BILLINGSLEY
TEAM LEADER EXAMINATION
SUPPORT AND SALES

Sandwich Press and Grill

Field of The Invention

- 5 The invention pertains electrical kitchen appliances and more particularly to a combination sandwich press and grill.

Background of The Invention

- 10 The motivation for the present invention stems from a desire to combine the functions of an electric grill with those of a sandwich press. As will be appreciated from the following description, a number of technical challenges are overcome for the purpose of providing the consumer with a device that is safe, functional and easy to use.

15

Objects of The Invention

It is an object of the invention to provide a combination sandwich press and grill which is versatile, safe, compact, and easy to use.

20

It is also an object of the invention to provide a combination of sandwich press and grill which requires a minimum of user input in order to change functions.

25

Brief Description of the Drawing Figures

Figure 1 is a perspective view of a combination sandwich press and grill according to the teachings of the present invention;

5

Figure 2 is a perspective view of the device depicted in Figure 1, in a fully open or grilling position;

Figure 3 is a side view of the device as depicted in Figure 2;

10

Figures 4 (a)-(d) are side views of the combination sandwich press and grill depicted in Figures 1-3;

Figure 5 is an exploded perspective of a hinge utilised by the combination


15 device depicted in the previous Figures;

Figures 6 (a) and (b) are cross sectional views of the hinge depicted in Figure 5;

20 Figures 7 (a) and (b) are a side view and a perspective view of a track arm;

Figures 8 (a)-(c) are partially cross sectioned side elevations showing the arm;

Figure 9 is an exploded perspective of a control panel in the device depicted
25 in Figure 1;



Figures 10 (a) and (b) are cross sections of the base of the device depicting the operation of the base plate tilt control mechanism;

- 5 Figure 11 is a cross sectional view depicting the anti-drip feature when the device is in an open position;

Figures 12 (a) and (b) are cross sections of the device illustrating the operation of the drip tray;

10

Figure 13 is a schematic diagram of a circuit for the device depicted in the proceeding drawing Figures;

- 15 Figure 14 is a schematic diagram of an alternate circuit for the heating elements;

Figure 15 is a schematic diagram of yet another circuit diagram;

- 20 Figure 16 is a schematic diagram of a further embodiment illustrating an alternate circuit.

Best Mode and Other Embodiments of The Invention

As shown in Figure 1, a combination sandwich press and grill 100 has many of the external appearance attributes of a sandwich press. It comprises
5 a lower housing 102 with a base plate 104. The rear of the lower housing 102, or the base plate 104, supports or has integrally formed into it a pair of hinge mechanisms 106, 108. The hinges support a generally 'U' shaped arm 110. A top housing 112 carrying a top plate 114 is hinged to an approximate mid point 116 of the arm 110. In addition, the lower housing further comprises
10 a front mounted control panel area 118 and incorporates an elongated internal gated drip tray 120.

As shown in Figure 2, the combination sandwich press and grill 100 is capable of opening fully to present two generally horizontal cooking surfaces,
15 these being a flat base plate 104 and a ribbed top plate. As will be explained, the base plate 104 is adjustable in it's inclination with respect to the horizontal. It also incorporates a peripheral rim 122 which is interrupted in a portion of its front edge above the drip tray 120 to define a spout 24. In preferred
embodiments, there is no elevated rim or only a small rim across the rear
20 edge 126 of the base plate 104.

As shown in Figure 3, when the device 100 is fully opened into a grilling position, the 'U' arm 110 acts as a foot for supporting the top housing 112 and the top plate 114. Preferably the middle portion of the arm makes supporting
25 contact.

As shown in Figures 4 (a)-(d) the combination sandwich press and grill 100 achieves it's functionality by being able to assume a number of distinct operating positions. Not shown in these drawing Figures, but located generally on the opposite side of the device is an adjustment mechanism which permits the top housing to assume a number of discrete positions between it's closed position shown in Figure 4 (a) through to it's maximum melt position as shown in Figure 4 (b). This same adjustment device also allows the upper and lower housings to be interlocked for storage purposes.

10 This type of adjustment mechanism and lock is well known in sandwich presses. Because the top housing 112 is provided with a centrally located and transverse pivot 400 which attaches it to the arm 110, the top housing and its top plate 114 are capable of pivoting about the arm 110 to some degree. As shown in Figure 4 (c), the device 100 is also capable of an open position

15 which is useful, for example, when food items are loaded are loaded onto and off of the base plate 104. As will be explained, unless the user intervenes, the 'U' shaped arm cannot travel into a further open or counter clockwise orientation. This position represents about 110 degrees rotation from the closed position. In this open position, the lower edge of the top plate 114 is

20 restrained by a track arm 402 from rotating away from the base plate. As will be further explained with reference to Figures 5-7 and 11, preventing the top plate 114 from this kind of rotation in the open position depicted in Figure 4 (c) prevents liquid drippings from falling anywhere but onto the base plate 104.

In the fully open or grilling position depicted in Figure 4 (d) the arm 110 makes contact with the supporting surface that holds the lower housing and the top plate 114. The top plate is held level by a supporting arm as will be explained with reference to Figures 8 (a)-(c). In order to change the position of the arm 110 and top plate 114 from the open position shown in Figure 4 (c) to the grilling position depicted in Figure 4 (d) the user must intervene by operating a locking knob 404, the operation of which will be explained below.

In the present example, the main hinges assemblies of the device 106, 108 are constructed differently. Figure 5 illustrates the construction of one of the hinges 106. In this example, the lower housing 102 rigidly supports a hinge component 500. The hinge component 500 comprises an inverted hollow compartment 502 and a pair or spaced apart hinge elements 504, 506. Each of the hinge elements has a central opening, in registry, to receive an assembly pin 508. A lower end 510 of the arm 110 is received in the gap between the hinge elements 504, 506. Also interposed into this gap is a track arm 402 which rotates about the pin 508 independently of the arm 110. As shown in Figures 5 and 6, the track arm 402 comprises a cam-like body 512 from which extends an arm 514. The track arm 514 incorporates an elongated opening 516 which defines a range of movement for the top housing 112 by trapping a pin which extends from the top housing into the opening 516.

The hinge assembly 106 also includes a rotating lock lever 518 which is carried within a fascia 520 and which is activated by the lock knob 404. As

shown in Figures 5 and 6, rotation of the locked knob 404 causes a commensurate rotation of the lock lever 518. A slotted extension 520 of the lock lever 518 engages a follower arm 522 which is affixed to a lock shaft 524. The lock shaft 524 passes through an opening 526 in the compartment 502 and also through an opening 528 in a lock arm 530. The lock arm 530 includes a nose 532 which is capable of interfering with a first stop 534 formed on the body 512 of the track arm unless it is moved out of the way by the action of the lock knob 404 as discussed above. In Figure 6 (a) the nose 532 of the lock lever is shown interfering with the stop 534.

10

Figure 6 (b) shows how the nose 532 has been moved out of the way by user intervention so the track arm and top housing are free to rotate into the fully extended or grilling position. In the grilling or fully open position the travel of the track arm 402 again arrested by interference of a second stop 536 which interferes with a portion of the lower housing, particularly, an abutment formed into a rear edge of the compartment 502.

15

Figure 7 (a) and (b) illustrate a second embodiment of the track arm in which the extension 514 carries only a single, straight and elongated slot 700. As previously explained, the slot 700 is adapted to receive a pin which is carried by the top housing. The pin is captured by the slot 700 and therefore the independent rotational movement of the track arm serves a limitation to the range of motion of the top housing and its top plate.

20

The operation of the other or opposite hinge 108 in conjunction with the main arm 110 is depicted in Figures 8 (a)-(c). As shown in these Figures, at least one long side arm 800 of the main arm 110 is at least partially hollow so as to receive a link arm 802. The link arm has a cam follower 804 at one end and a "U" shaped linkage 806 at the other end. The linkage 806 is adapted to engage a pin formed on a rotating support arm 808. As shown in these Figures, rotation of the main arm 110 into the fully open or grilling position depicted in Figure 8 (c) causes the cam follower 804 of the link arm 802 to contact a tapered cam surface 810 which is carried by or forms a part of the lower housing or the base plate. When fully open, the tapered cam urges the link arm 802 to rotate the support arm 808 so that an extension 812 contacts a shoulder 814 formed on the top plate 114. The shoulder 814 may also be formed on the upper housing 112. This serves to elevate the far end 816 of the top plate and thereby bring it into a generally horizontal position. In the orientation shown in Figure 8 (c) the top plate is prevented from clockwise rotation by interference at 814 with the support arm 808 and prevented from rotating in the counter clockwise direction by the action of the track arm as previously discussed.

As shown in Figure 9, a control panel 900 is located on a front surface of the lower housing 118. The control panel 900 is adapted to receive the various controls which are required for the electrical operation of the device 100. The control panel 900 may also receive the components required for a base plate tilt adjustment mechanism 902. The mechanism 902 generally comprises a rotating tilt knob 904 which cooperates with a rotating tilt lever

906 located on an opposite side of the control panel. An arm 908 of the tilt lever 906 cooperates with a link 910. One end 912 of the link 910 is carried by a front edge 914 of the base plate 104. Accordingly, rotation of the tilt knob 904 causes the base plate 104 to move from an inclined position

5 depicted in Figure 10 (a) to a horizontal position depicted in Figure 10 (b). Users will generally prefer the inclined position depicted in Figure 10 (a) when cooking foods where fats and greases or other liquids are expected to run off the base plate 104.

10 As shown in Figure 11-13, the combination sandwich press and grill 100 of the present invention comprises a lower housing 102 which incorporates a cavity for receiving a drip tray 120. The drip tray 120 incorporates a front edge 1102 with a grip, which extends beyond the descending lip 1104 of the spout area 124 of the base plate 104. As shown

15 in Figures 11 and 12, the drip tray 120 also extends towards the rear of the device 100 far enough to capture drippings which flow from the front or rear edge of the top plate 114 when it is in the fully extended or grilling position. An abutment 1200 at the rear of the lower housing 102 prevents the drip tray 120 from being inserted too far. The ability of the drip tray 120 to capture

20 drippings from both the base plate 104 and top plate 114 during grilling operations is clearly shown in Figure 12 (a). From Figures 11 and 12 it will also be observed that the top plate 114 is designed with ribs 1106 which are separated by valleys 1108. In the fully open position depicted in Figure 12, the upper surfaces of the ribs 1106 are generally horizontal and maintained in

25 that position by the mechanism depicted in Figure 8. However, the valleys

118 are gently inclined toward the drip tray 120 to promote the removal of liquids during grilling operations. In preferred embodiments all or part of the cooking surface of the top plate 114 may be surrounded by a collection trough 1110 as suggested by Figure 11.

5

Figure 11 also illustrates that when the top housing 112 is fixed into the open position, the lower edge of the top plate 114 is fixed above some portion of the base plate and therefore must drip onto the base plate. The lower edge is not capable of rotating away from the base plate 104 owing to the operation
10 of the track arm 402 as explained above.

A first and preferred circuit diagram for a combination sandwich press and grill 100 is shown in Figure 13. As shown by the circuit diagram of Figure 13, the electrical circuit includes a base plate heating element 1300 and a top
15 plate heating element 1302. The base plate heating element 1300 is preferably an 1100 W/240V element and the top element 1302 is preferably a 1300 W/240V. A thermal fuse 1304 prevents the device from over heating. A user controlled, variable thermostat 1306 provides an operating range of about 180 C to 220 C. When the variable thermostat 1306 reaches an
20 operating temperature of 200 C, a remote micro switch 1306 bypasses the 200 C fixed thermostat 1310 of the top heating element in favour of a 220 C fixed thermostat 1312.

Another embodiment of the invention utilises the circuitry depicted in
25 Figure 14. In this embodiment, the circuitry includes a thermal fuse 1400 and

a single 180/220 C variable thermostat 1404. Note that the variable thermostat 1402 controls only the base plate heating element 1404 which is preferably an 1100 W/240V type element. The top plate heating element 1406 is preferably a 1300 W/240V heating element which is regulated by a
5 single 200 C fixed thermostat 1408.

As shown in Figure 15, a third embodiment of the invention incorporates an electronic circuit incorporating a user activated switch 1500 which allows for the disconnection of the top heating element 1502. The top
10 heating element 1502 is preferably a 1300 W/240 V element which is regulated by a single 200 C fixed thermostat 1504. The same user activated switch 1500 allows for power to be supplied to either of two base plate heating elements 1506, 1508. The first heating element 1506 is an 1100 W/240 V element where as the second base plate element 1508 is a 1300 W/240 V
15 element. Both base plate elements 1506, 1508 are regulated by a 180/220 C variable thermostat 1510.

A fourth embodiment is depicted in Figure 16. In this embodiment, base plate heating elements 1600, 1602 as well as the top plate heating
20 element 1604 are regulated by a 180/220 C variable thermostat 1606. This embodiment also allows the user to selectively activate or deactivate the top plate cooking element 1604 (with the switch 1500) while at the same time selecting between one or both base plate heating elements 1600, 1602. In this embodiment, the first base plate heating element 1600 is preferably 1100



W/240 V and the second base plate heating element 1602 is preferably 1300

W/240 V. The top plate element 1604 is preferably 1300 W /240 V.

While the invention has been disclosed with reference to particular
5 details of constructions these should be understood as having been provided
by way of example and not as limitations to the spirit or scope of the invention.

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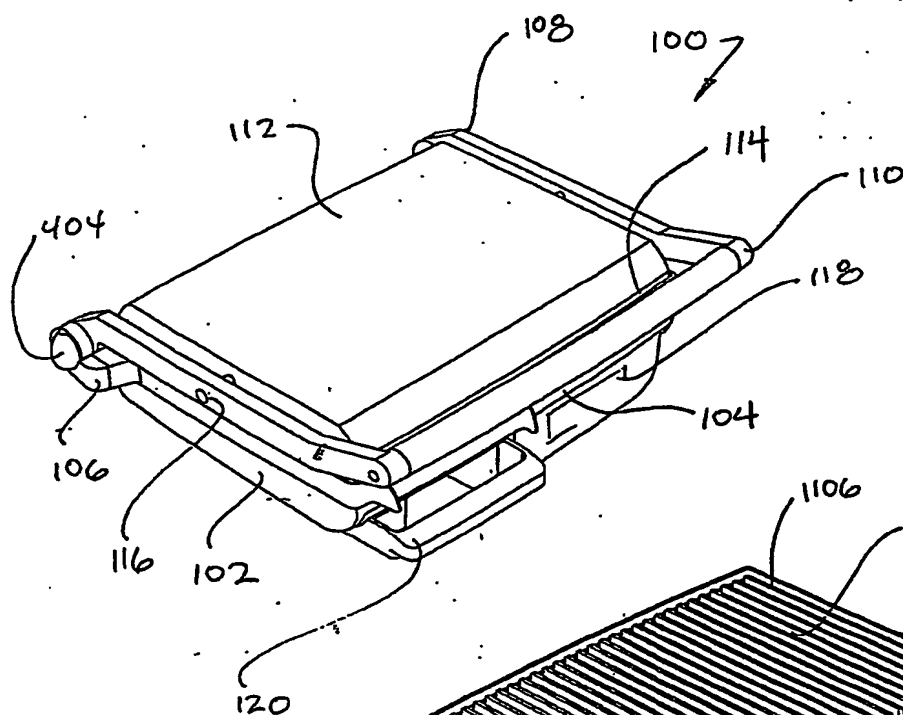


Fig. 1

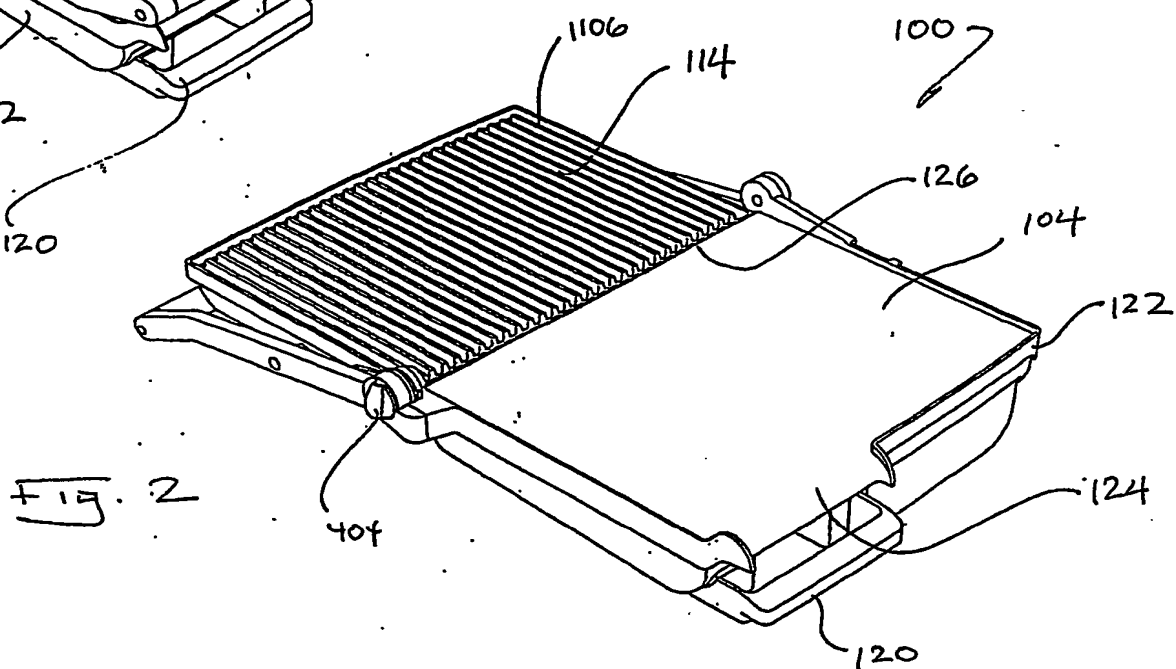


Fig. 2

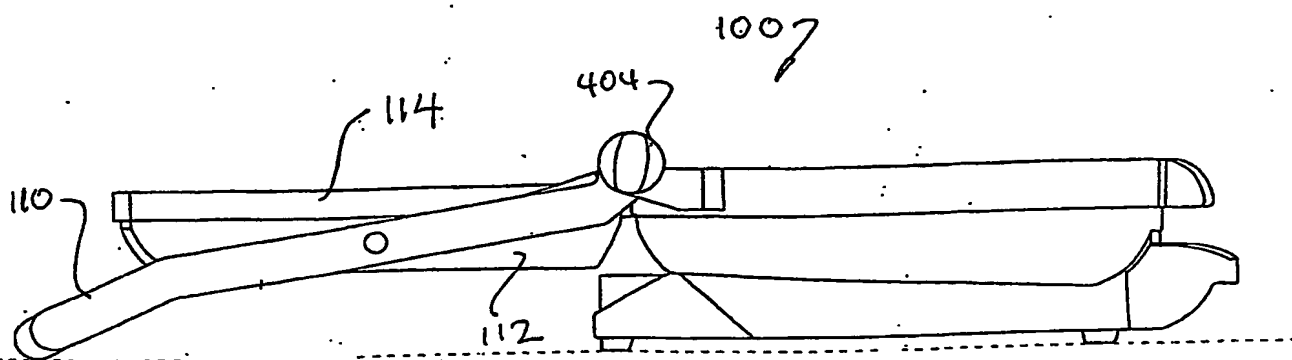


Fig. 3

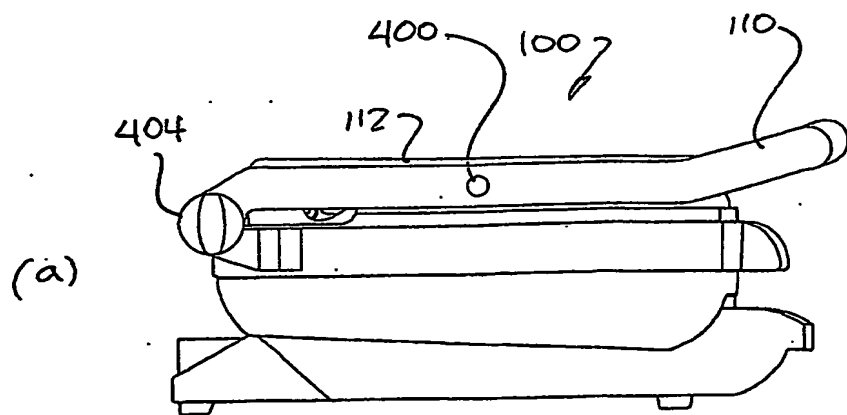
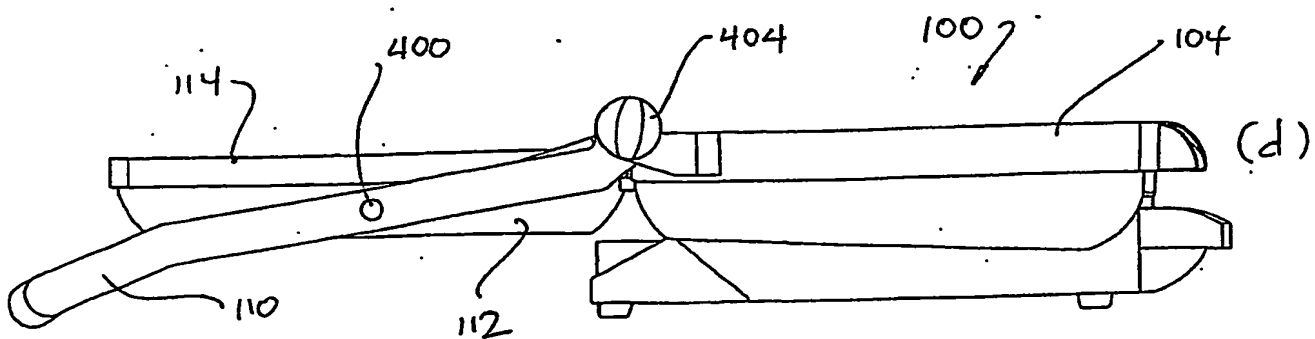
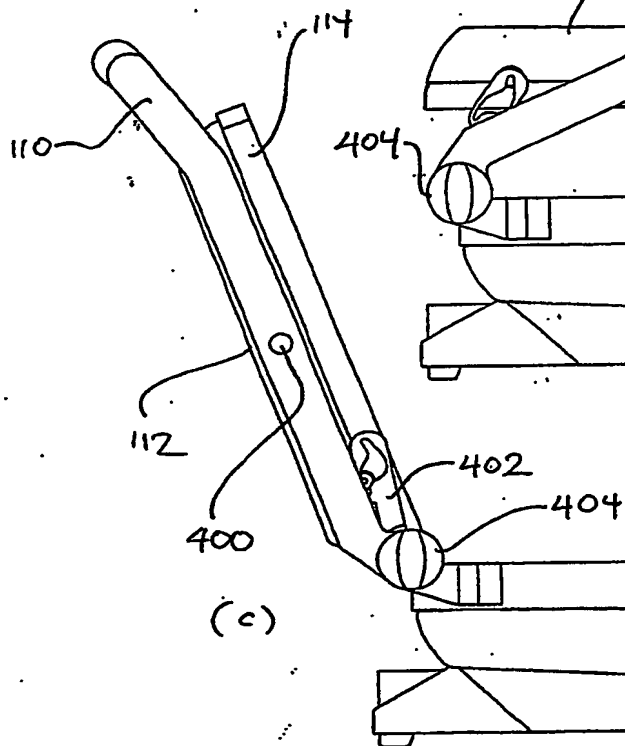
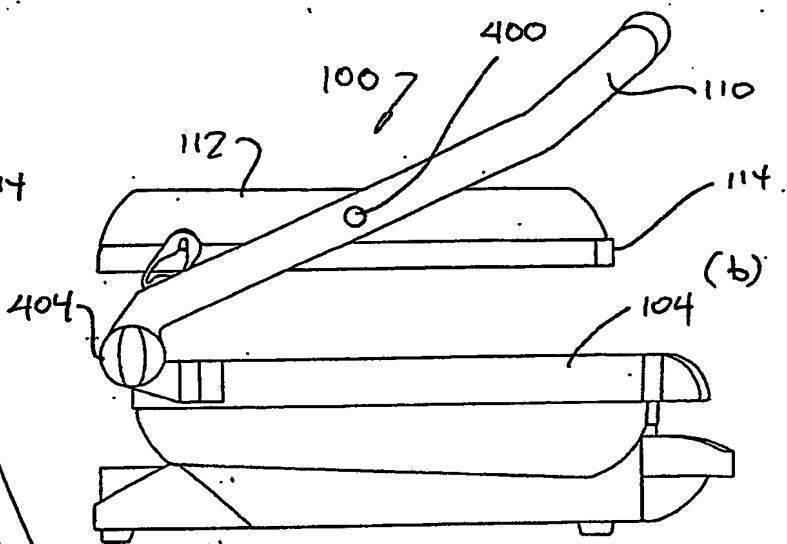


Fig. 4



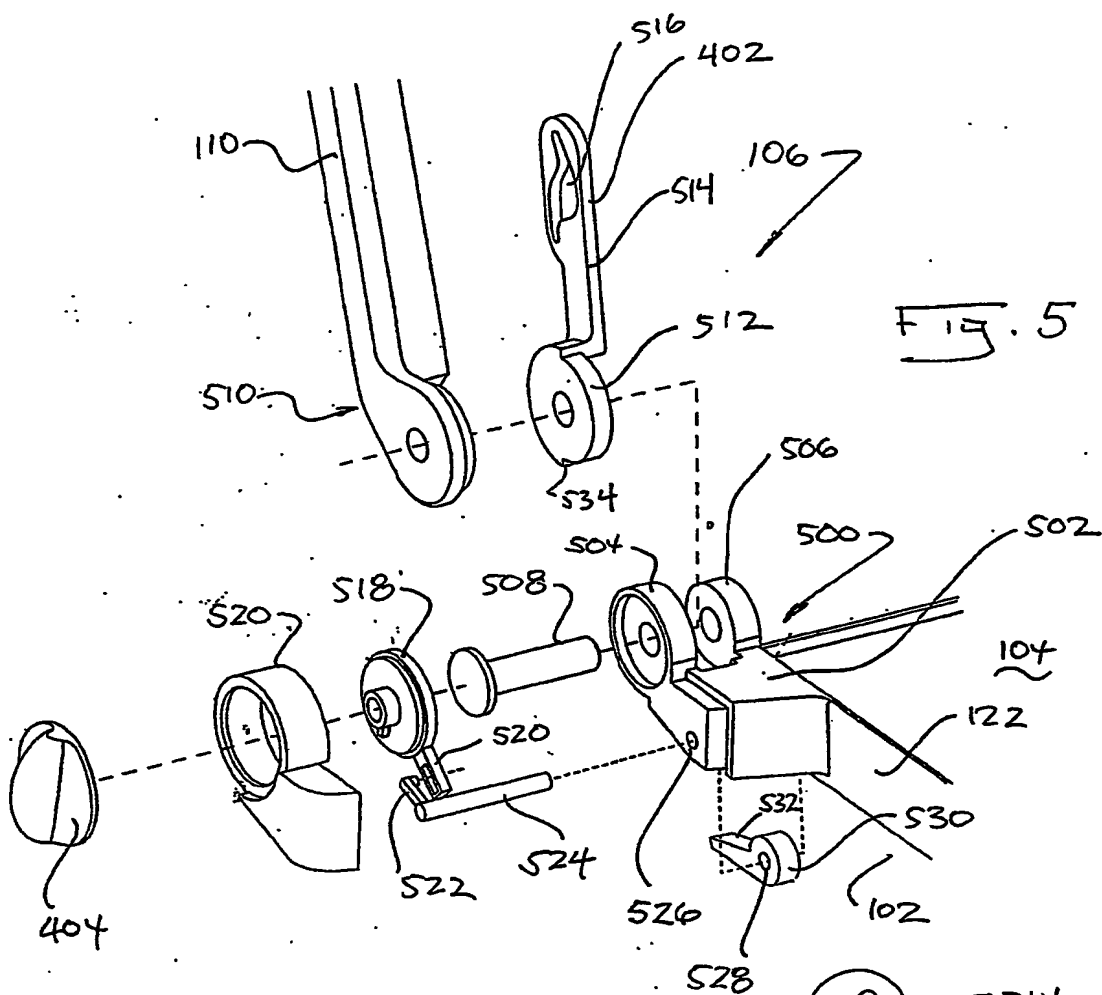


Fig. 6

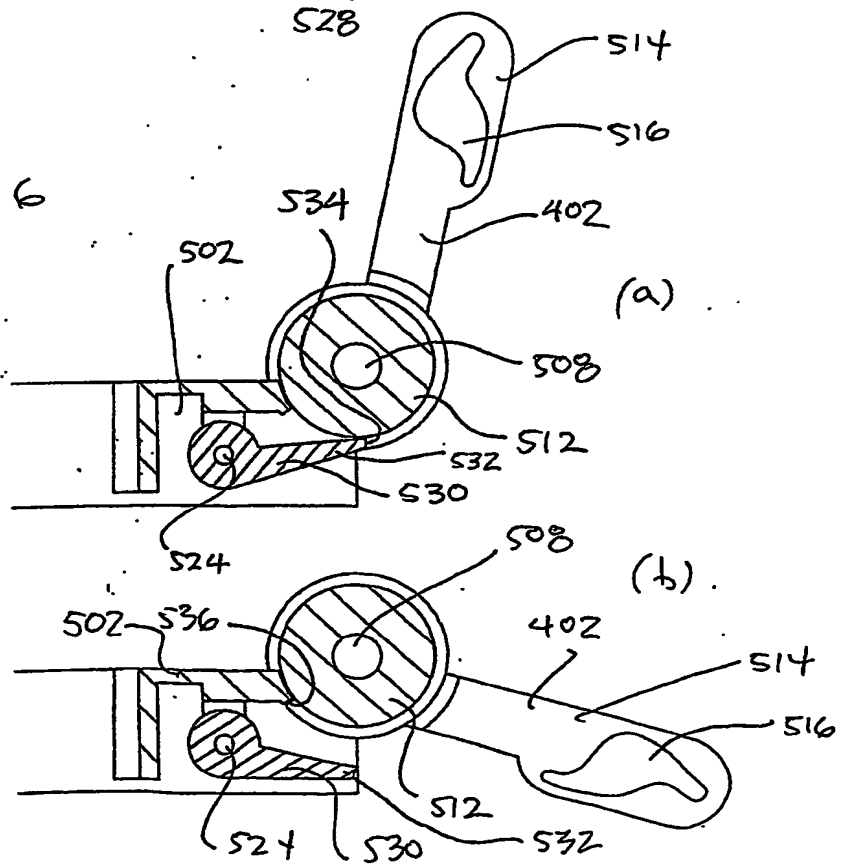
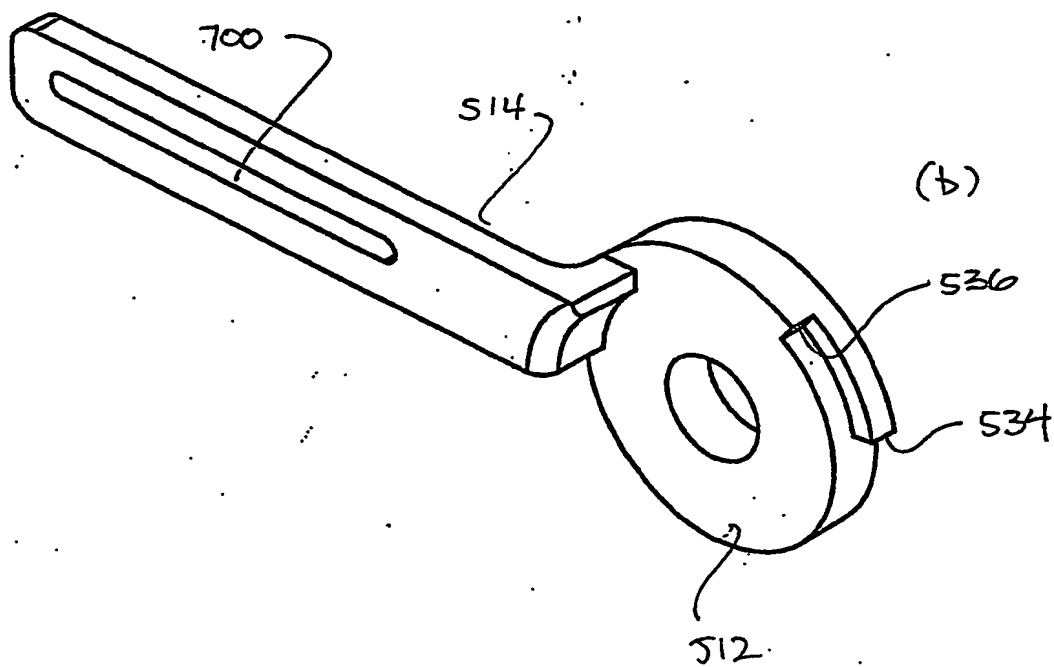
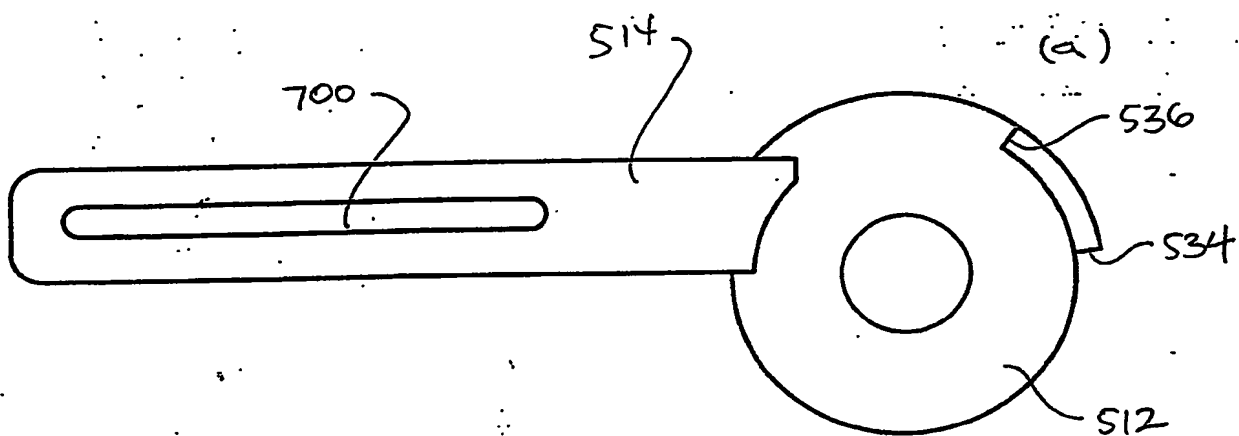


Fig. 7



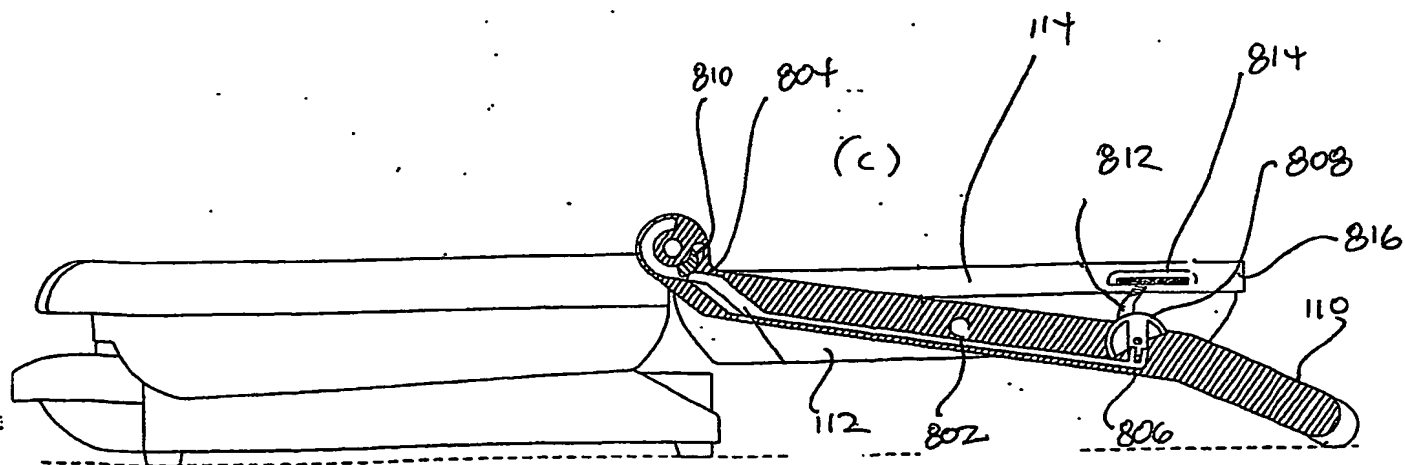
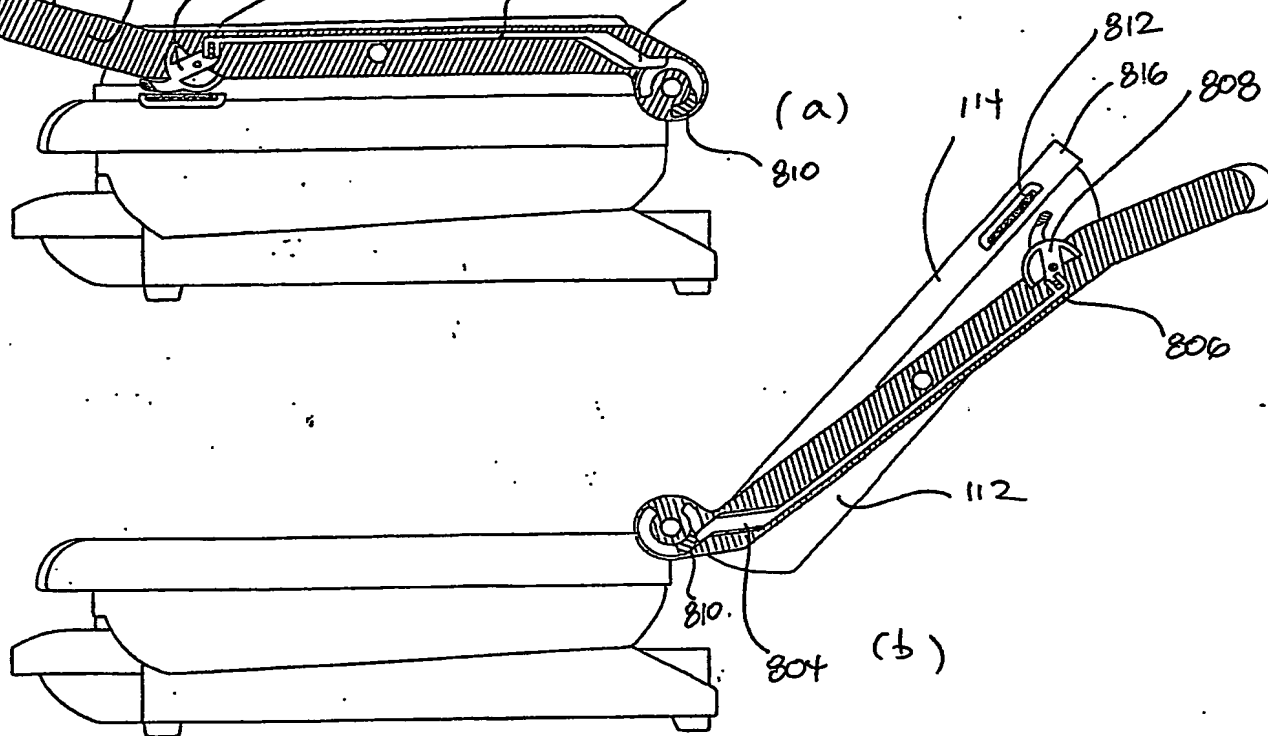
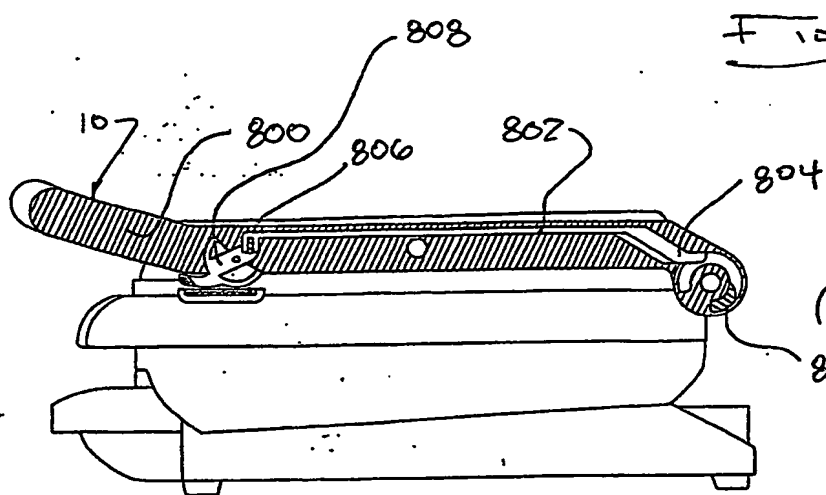


FIG. 9

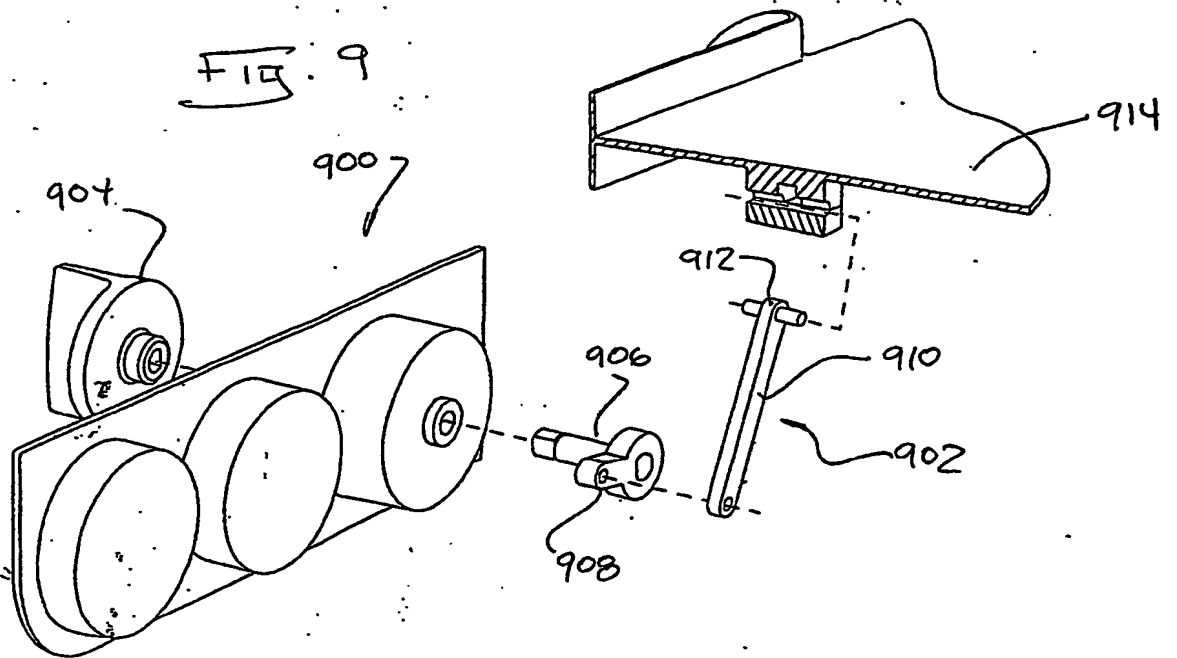
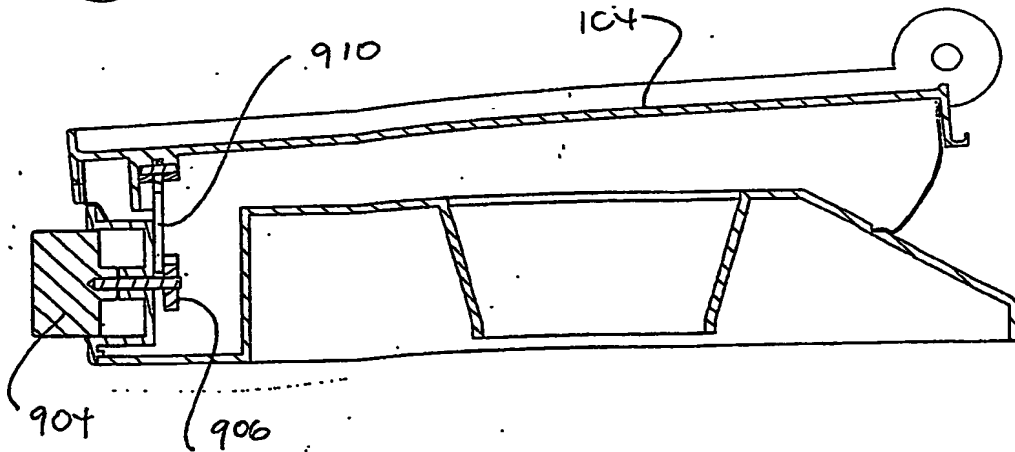


FIG. 10

(a)



(b)

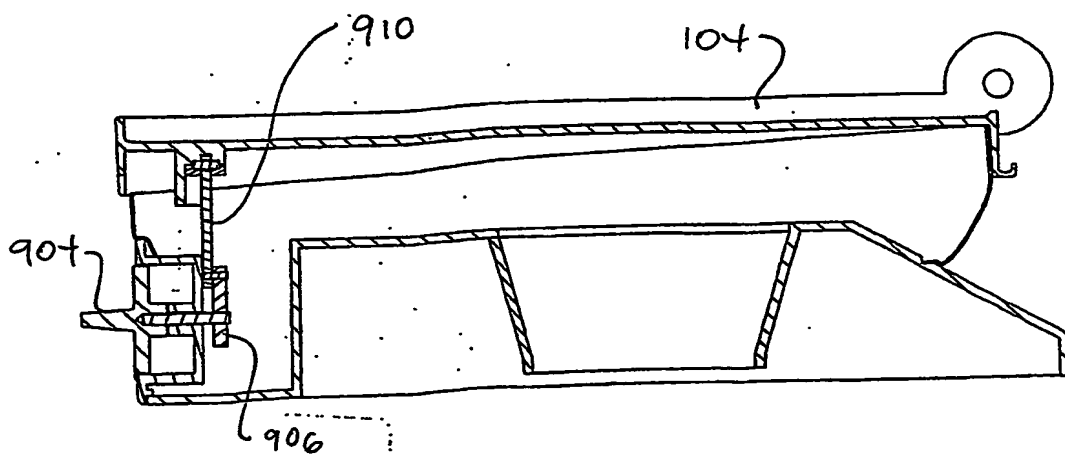


Fig. 11

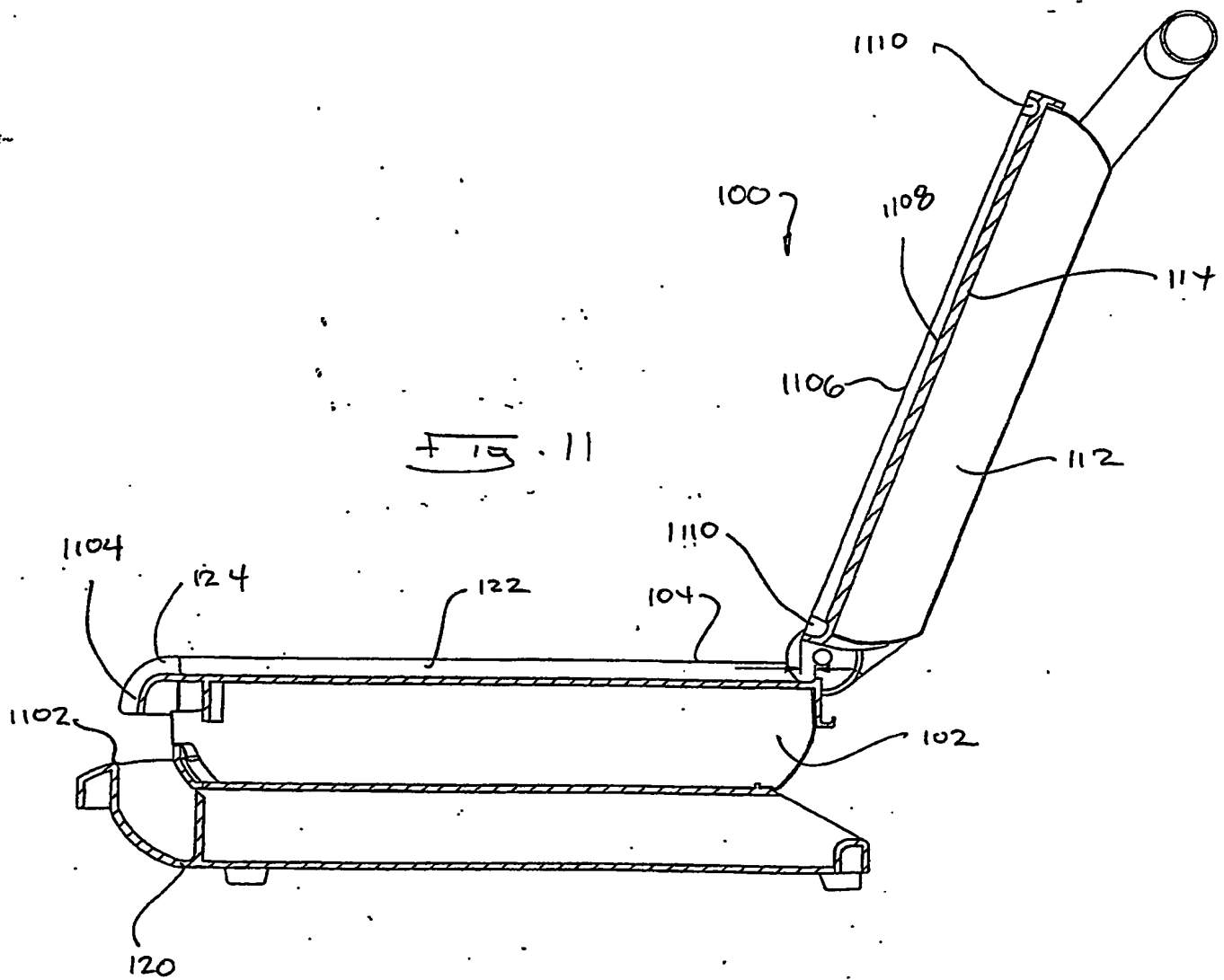


FIG. 12

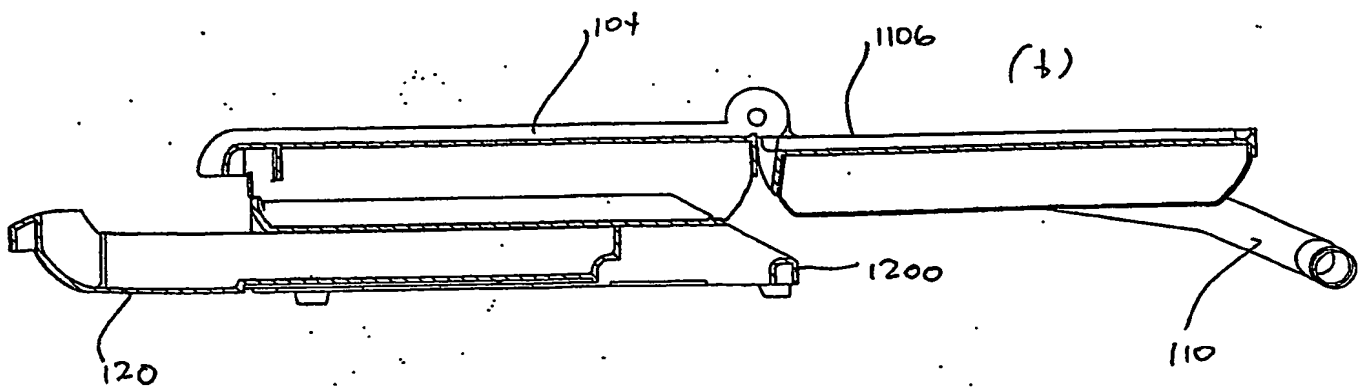
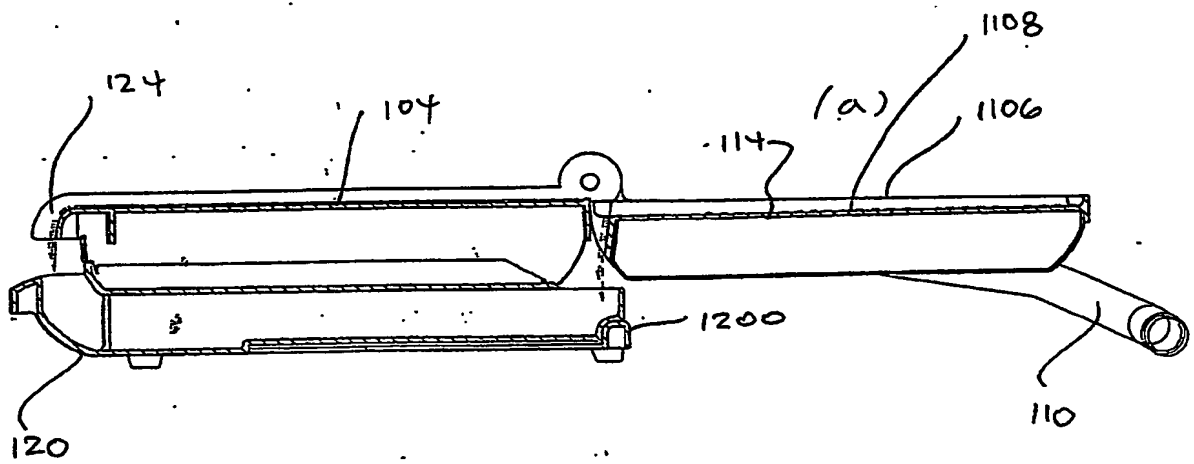
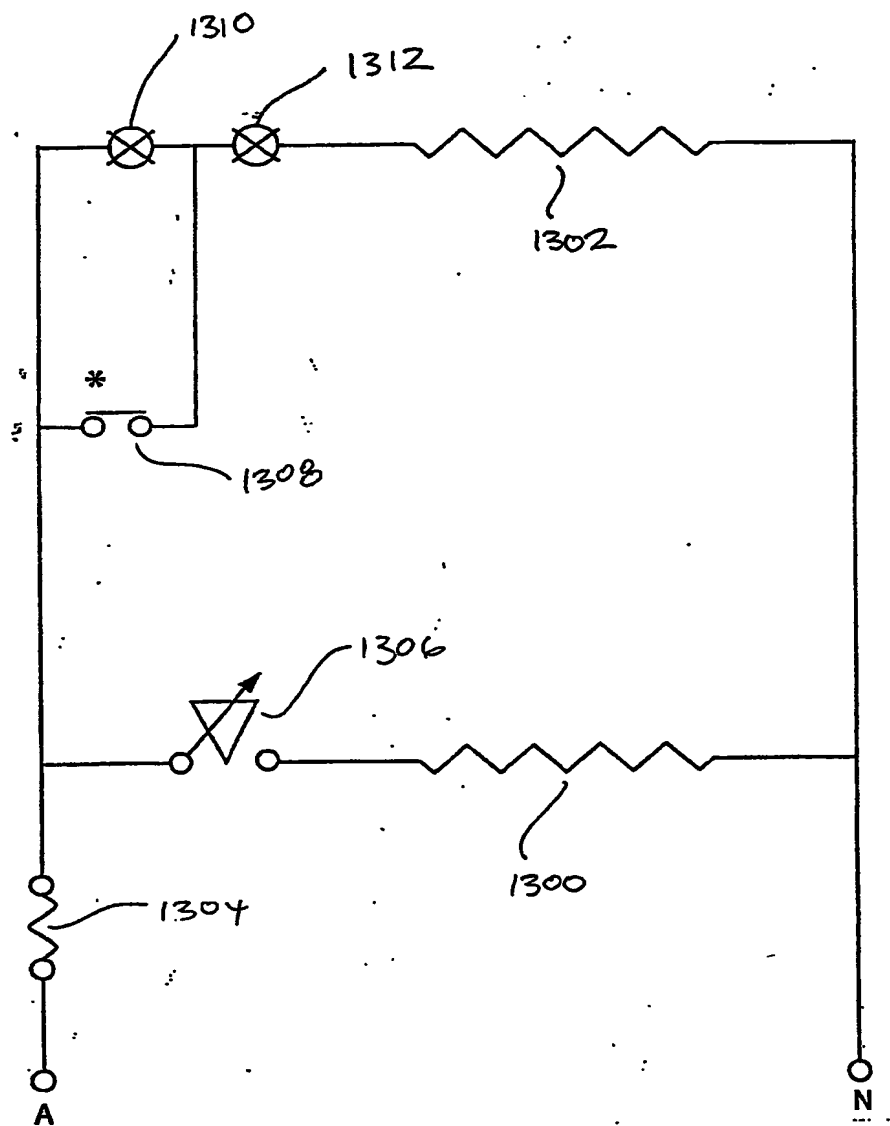


Fig. 13



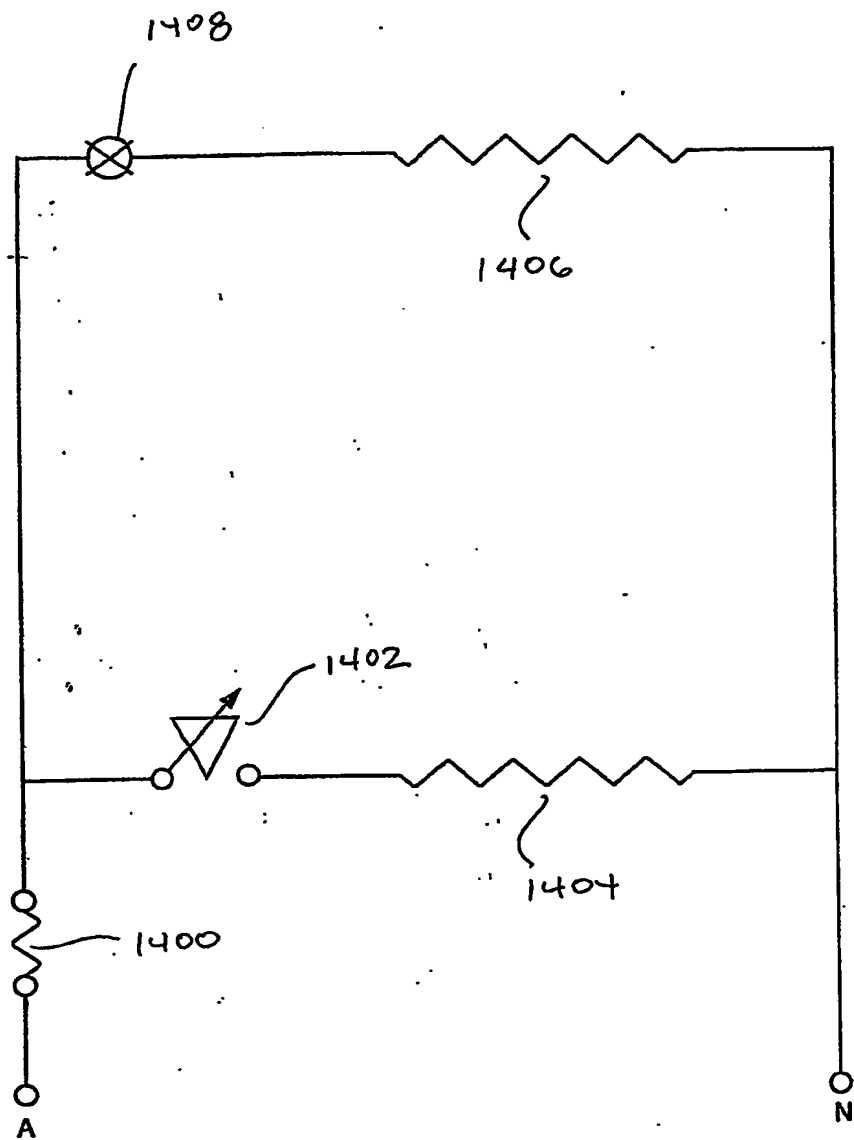
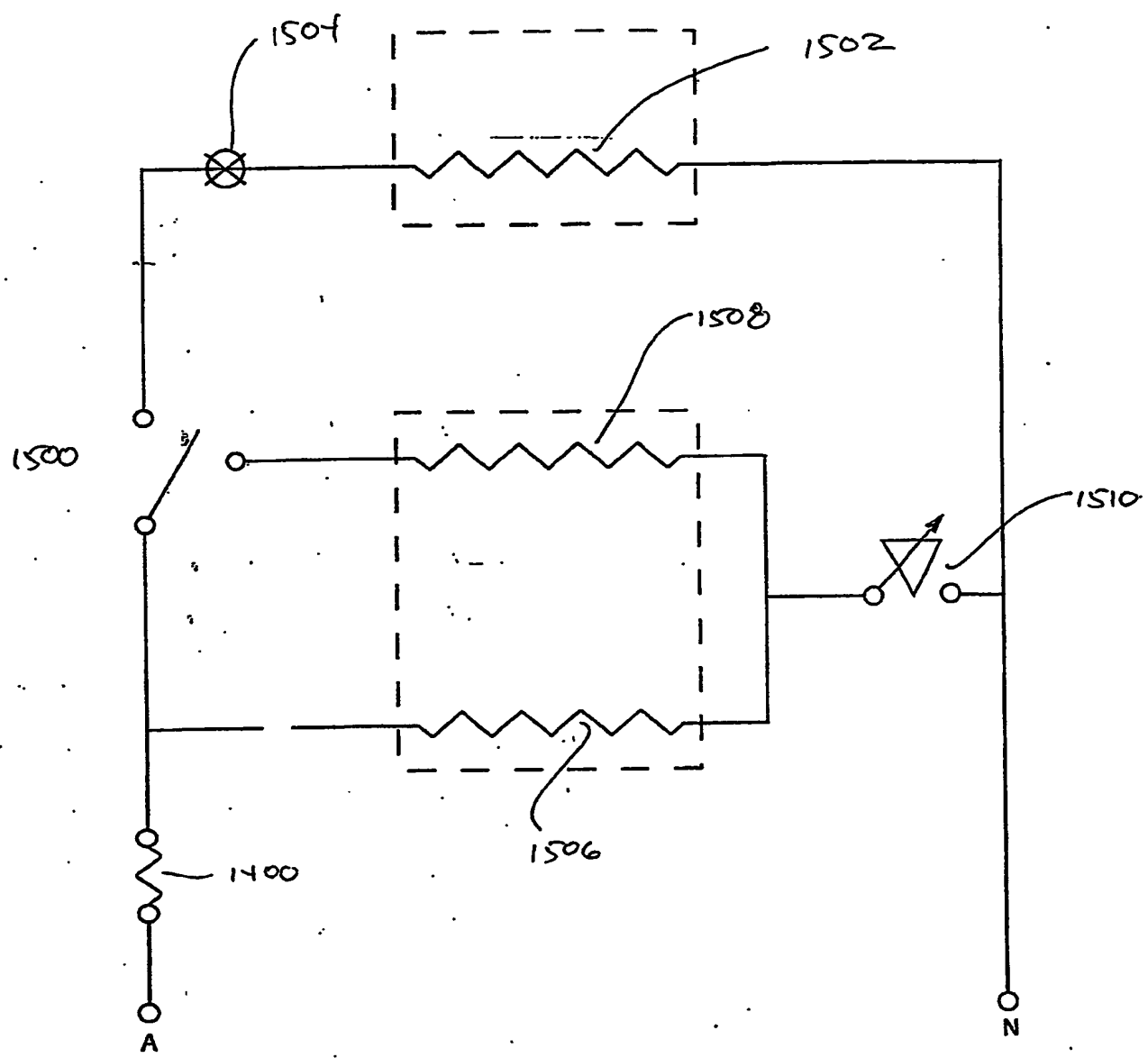


Fig. 14



+15 15

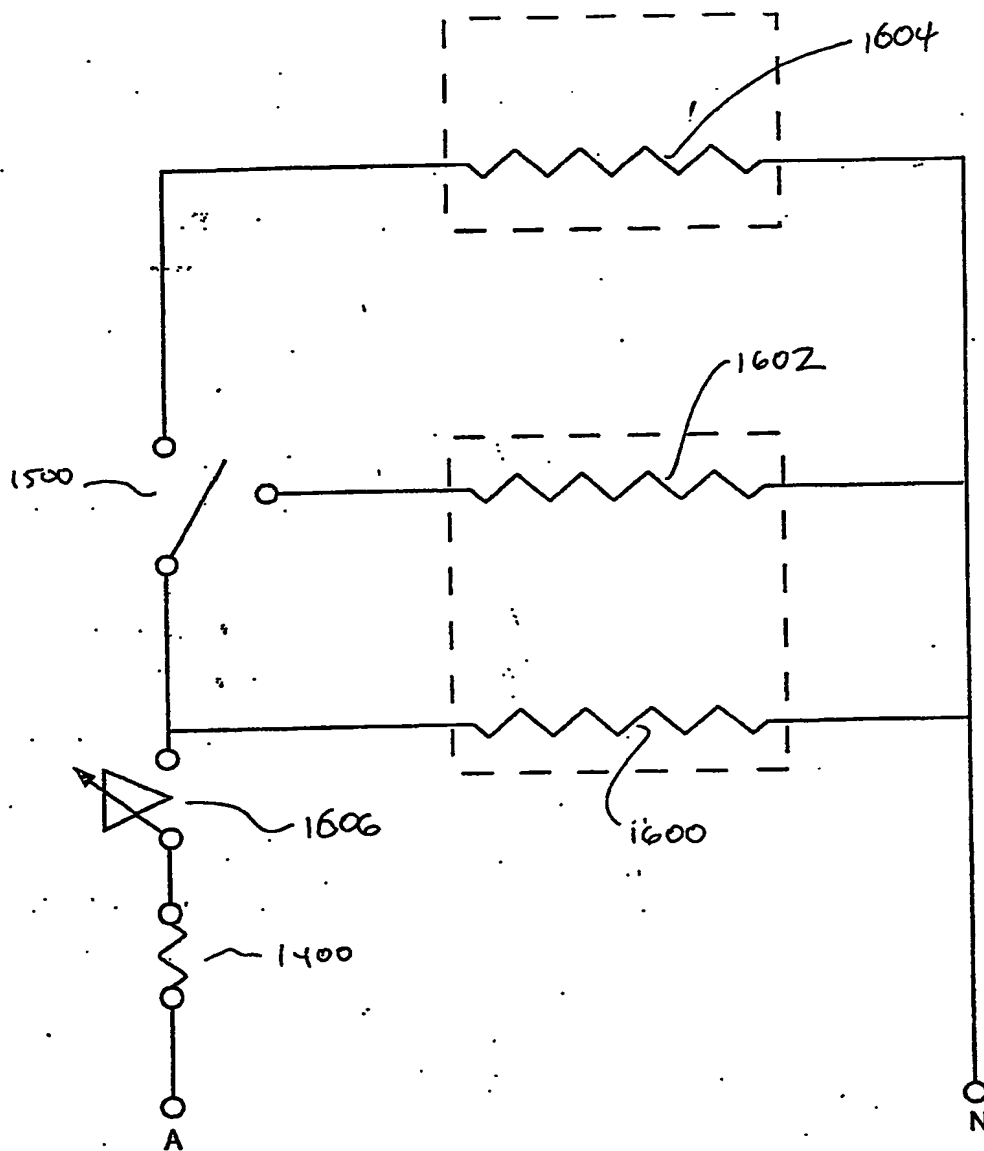


Fig. 16

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